

**R E M A R K S**

Claims 1-18, 20 and 21 are pending in the present application. Support for the amendment to claim 1 can be found in cancelled claim 19. Claims 2-5 and 16-18 have been amended for clarity. Support for new claim 21 can be found on page 6, lines 13-15. No new matter has been added by way of the above amendment.

The following sections correspond to the sections of the outstanding Office Action.

**[I] EP 803764 (EP '764), Deroover et al., U.S. 5,945,263,  
Uytterhoeven et al., U.S. 6,280,923**

Claims 1-20 are rejected under 35 U.S.C. §103(a) as being unpatentable over EP '764 in view of either Deroover et al. or Uytterhoeven et al. Applicant respectfully traverses the rejection.

***[IA] Advantages of the Present Invention -***

The present invention is drawn to a photothermographic material comprising a heat-fusible solvent that is solid at ordinary temperatures and can be fused at a heat development temperature, wherein the heat fusible solvent is in a layer other than the image forming layer and optionally is also in the image

forming layer.

The advantages of the inventive photothermographic material include high sensitivity, high developing speed and low performance fluctuation due to a variation in the heat development temperatures.

Illustrative of these improved properties, are the exemplified embodiments described in the present specification. In Inventive Sample 1, a photothermographic material was prepared with the heat-fusible solvent, D-Sorbitol, used in the intermediate layer on the image formation side of the photothermographic material. In Comparative Sample A, the same photothermographic material was used, except that D-Sorbitol was not included. Inventive Sample 1 and Comparative Sample A were tested for Dmin and Dmax at various temperatures and the data is provided in the following Table, which was obtained from Table 1 on page 65 of the present specification.

Table 1

Sample No.	119°C, 10 sec.		119°C, 15 sec.		119°C, 20 sec.	
	Dmin	Dmax	Dmin	Dmax	Dmin	Dmax
A (Comparative)	0.10	0.48	0.10	1.20	0.12	1.46
1 (Invention)	0.10	1.02	0.10	1.44	0.12	1.50

As can be seen from this data, the inventive photothermographic material containing the heat-fusible solvent in a layer other than the image forming layer has a high blackening

density without an increase in the fog.

In inventive Sample 2, a photothermographic material was prepared with succinimide added as the heat-fusible solvent in the coating solution for the protective layer (a non-image forming layer). Comparative Sample B was prepared in the same manner as Inventive Sample 2, except that the succinimide was omitted from the coating solution for the protective layer. The following Table contains the data obtained from testing Comparative Sample B and Inventive Sample 2.

Table 2

Sample No.	119°C, 10 sec.		119°C, 15 sec.		119°C, 20 sec.	
	Dmin	Dmax	Dmin	Dmax	Dmin	Dmax
B (Comparative)	0.10	0.42	0.10	2.81	0.10	3.57
2 (Invention)	0.10	2.60	0.10	3.82	0.10	4.00

As can be seen from the above Table, there was a high blackening density obtained in the Inventive Sample without increased fog when compared to the Comparative Sample B.

Also, the inventive photothermographic material was tested for stability at relative humidity. The data from Table 3 on page 76 is given in the following Table:

Table 3

Sample No.	Relative humidity			
	10%	30%	50%	70%
B (Comparative)	1.45	2.51	3.57	4.05
2 (Invention)	2.70	3.20	3.82	4.10

As can be seen from the data, it was confirmed that Inventive Sample 2 showed a higher Dmax compared with Comparative Sample B at a low humidity, and showed a smaller difference in Dmax values for both high and low humidities.

The above described advantageous effects of a photothermographic material containing a heat-fusible solvent in a layer other than the image forming layer is novel finding that cannot be expected based on the teachings of the prior art.

Applicant has provided the above explanation to highlight the distinctions between the present invention and the cited references.

*[IB] Patentable Distinctions Between Present Invention and Cited Art -*

The Examiner states in the paragraph bridging pages 2 and 3 of the outstanding Office Action:

EP '764 differs from the claimed material in its failure to disclose the heat-fusible solvent therein..

Accordingly, the Examiner acknowledges that EP '764 fails to teach or suggest the use of a heat-fusible solvent in the photothermographic material. In order to cure this deficiency, the Examiner cites Uytterhoeven et al. and Deroover et al. for teaching the heat fusible solvents.

Uytterhoeven et al. teach at column 13, lines 38-63 that "thermal solvents" can be used in the photothermographic material. However, in column 13, lines 44-60, Uytterhoeven et al. define the term "thermal solvents" to mean:

a non-hydrolyzable organic material which is in a solid state **in the recording layer** at temperatures below 50°C., but becomes a plasticizer **for the recording layer** where thermally heated and/or a liquid solvent for at least one of the redox-reactants, e.g., the reducing agent for the substantially light-insensitive silver salt of an organic carboxylic acid, at a temperature above 60°C. (Emphasis added)

Thus, the heat-fusible solvent of Uytterhoeven et al. is located in the image forming layer, and Uytterhoeven et al. fail to teach or fairly suggest that the heat-fusible solvent can be located in other than the image forming layer, as presently claimed.

Deroover et al. is a U.S. patent whose inventors appear to have worked on similar types of materials as the inventors of the U.S. patent to Uytterhoeven et al., and the inventors of Deroover et al. have given the term "thermal solvents" essentially the same meaning as the inventors of the U.S. patent to Uytterhoeven et al. Thus, the heat-fusible solvent of Deroover et al. is located in the image forming layer, and Deroover et al. fail to teach or fairly suggest that the heat-fusible solvent can be located in other than the image forming layer, as presently claimed.

**[IC] Conclusion**

As the MPEP directs, all the claim limitations must be taught or suggested by the prior art to establish a *prima facie* case of obviousness. See MPEP § 2143.03. Accordingly, a *prima facie* case of obviousness cannot be said to exist, since the inventive limitation that the heat-fusible solvent is located in other than the image forming layer is neither taught nor suggested. As such, withdrawal of the rejection is respectfully requested.

[III] EP '764, Deroover et al. and Uytterhoeven et al.,

Specification disclosure on page 5 (pg. 5)

Claims 7-15 are rejected under 35 U.S.C. §103(a) as being unpatentable over EP '764 in view of either Deroover et al. or Uytterhoeven et al. as applied to claims 1-20 above, and further in view of pg. 5. Applicant respectfully traverses the rejection.

The Examiner, aware of the deficiencies of EP '764 and Deroover et al. or Uytterhoeven et al., cites Applicant's own disclosure to cure the deficiencies. Applicant respectfully submits that the disclosure on page 5 does not cure the deficiencies of the combination of EP '764 and Deroover et al. or Uytterhoeven et al.

The Examiner has taken the position that the disclosure on page 5, lines 12-20 is an admission that the listed references teach heat-fusible solvents. However, the Examiner will note that page 5, lines 12-20 of the present specification does not recite that the prior art teaches that the heat-fusible solvent is located "in a layer other than the image forming layer", as presently claimed.

Accordingly, the disclosure on page 5 does not cure the deficiencies of the combination of EP '764 and Deroover et al. or Uytterhoeven et al., and as such, a *prima facie* case of obviousness cannot be said to exist. Withdrawal of the rejection is respectfully requested.

### **Conclusion**

In view of the above-amendments and comments, Applicant respectfully submits that the claims are in condition for allowance. A Notice to such effect is earnestly solicited.

Applicant has attached hereto a marked up version of the claims to show the changes made for the Examiner's convenience.

If the Examiner has any questions concerning this application, he is requested to contact Garth M. Dahlen, Ph.D. (#43,575) at the offices of Birch, Stewart, Kolasch & Birch, LLP.




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If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under § 1.17; particularly, extension of time fees.

Respectfully submitted,

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Attachment: Version with Markings to Show Changes Made

VERSION WITH MARKINGS TO SHOW CHANGES MADE

Claim 19 has been cancelled without prejudice.

The claims have been amended as follows:

Claim 1. (Amended) A photothermographic material comprising at least (a) a photosensitive silver halide, (b) a silver salt of an organic acid, (c) a reducing agent and (d) a hydrophobic and thermoplastic organic binder on a support; [which contains] and a heat-fusible solvent that is solid at an ordinary temperature and can be fused at a heat development temperature wherein the heat-fusible solvent is in a layer other than the image forming layer.

Claim 2. (Amended) A photothermographic material according to Claim 1, [which] wherein the photothermographic material is produced through a step of coating and drying a coating solution containing a latex dispersed in water as the organic binder.

Claim 3. (Amended) A photothermographic material according to Claim 1, [which contains] wherein the photothermographic material further comprises a halogen-releasing precursor.

Claim 4. (Amended) A photothermographic material according to Claim 1, [which contains] wherein the photothermographic material further comprises an ultrahigh contrast agent.

Claim 5. (Amended) A photothermographic material according to Claim 1, [which] wherein the photothermographic material is produced through at least one step selected from a step of coating and drying a coating solution containing microparticles of the reducing agent solid-dispersed in water, a step of coating and drying a coating solution containing microparticles of an ultrahigh contrast agent solid-dispersed in water, and a step of coating and drying a coating solution containing microparticles of a halogen-releasing precursor solid-dispersed in water.

Claim 16. (Amended) A photothermographic material according to Claim 1, [which contains] wherein the heat-fusible solvent is in an amount of 5-500 parts by weight per 100 parts by weight of the binder.

Claim 17. (Amended) A photothermographic material according to Claim 16, [which contains] wherein the heat-fusible solvent is in an amount of 10-300 parts by weight per 100 parts by weight of the binder.

Claim 18. (Amended) A photothermographic material according to Claim 1, [which contains] wherein the heat-fusible solvent is in an image forming layer.

Claim 21 has been added.